

ACOUSTICAL ANALYSIS REPORT

Paseo Village Townhomes
Day Street & La Brea Street
Ramona, CA 92065
APN: 282-130-22, -23, -24, & -25

County of San Diego TM5509/S06-030/ER 06-09-019

Prepared For

Day Street Development, LLC
Attention: Steve Powell
17104 Woodson View Lane
Ramona, California 92065
Phone: 760-789-5493

Prepared By

Eilar Associates
Acoustical & Environmental Consulting
539 Encinitas Boulevard, Suite 206
Encinitas, California 92024
www.eilarassociates.com
Phone: 760-753-1865
Fax: 760-753-2597

Job #A61038N2

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1.0 EXECUTIVE SUMMARY

The proposed project, Paseo Village Townhomes, consists of the construction of nine new two-story buildings encompassing a total of 31 single-family residential townhome style units, complete with private patios. It also incorporates two private driveways, outdoor parking, and a large courtyard. The project site is located on the southeast intersection of Day Street and La Brea Street in the Community of Ramona, California.

The primary noise sources in the vicinity of the project site include traffic noise from Main Street, Day Street, and La Brea Street. The current calculated on-site noise level at the northwestern corner of the project site is 57.9 CNEL. Due to a projected increase in traffic volume, the future (year 2030) noise level at the northwestern corner of the project site is expected to increase to 58.8 CNEL.

The Ramona Airport is located approximately 1.23 miles to the northwest of the project site. The project is currently located approximately 0.5 miles northwest of the 55 CNEL contour. After reviewing the Ramona Airport Noise Compatibility Contours from 2004 and 2006, it has been determined that the aircraft noise impacting the project cannot be mitigated within reason, therefore only traffic noise will be taken into consideration for this report.

The Community of Ramona Noise Element of the General Plan states that exterior noise levels shall not exceed 55 CNEL at common outdoor usable areas. Calculations show that the future traffic noise levels at the proposed common outdoor usable area will be 51.8 CNEL; therefore no sound wall mitigation will be necessary.

The County of San Diego's Noise Element of the General Plan states that exterior noise levels shall not exceed 60 CNEL at private outdoor useable areas. Calculations show that with the incorporation of the planned 3-foot high patio and balcony walls, the future traffic noise levels at proposed private outdoor use areas will range from 45.4 CNEL at the patio of Unit 31 to 59.9 CNEL at the balcony of Unit 1. Future noise levels are not expected to exceed 60 CNEL; therefore no further sound wall mitigation will be necessary.

Calculations show that future traffic noise levels at the building facades will range from 41.9 CNEL at the first level western facade of Building 6 (Unit 22) to 59.5 CNEL at the second level western facade of Building 1 (Units 1, 2, and 3). Since future exterior on-site noise levels will not exceed 60 CNEL at the building facades, an exterior-to-interior noise analysis will not need to be conducted.

The proposed outdoor A/C mechanical equipment was evaluated to determine if noise impacts at relevant worst-case property lines will exceed the San Diego County Code of Regulatory Ordinance of 50 dBA at the residential (RV15) property lines and 52.5 dBA at the commercial property lines. Worst-case mechanical A/C noise emission calculations show that noise impacts to the property lines will range from 41.3 dBA at the western property line to 52.4 dBA at the southern property line. These impacts will not exceed the San Diego County Code of Regulatory Ordinance limits, therefore no mitigation is deemed necessary.

An on-site construction noise analysis was conducted to determine if mitigation is necessary and feasible to reduce project related temporary construction noise impacts to below 75 dBA when measured at neighboring property lines of any residential development, in compliance with the County of San Diego Project Scoping Letter. Two worst-case construction grading scenarios have been analyzed for this project site based on the expected grading equipment to be used. Calculations show that the worst-case temporary construction noise impacts from the proposed

project will be as high as 82.6 dBA at about 30-feet beyond the eastern property, with a bulldozer, tractor with a blade, and a backhoe operating within the area. These noise impacts will exceed the San Diego County Code of Regulatory Ordinances; therefore mitigation is recommended that a 10-foot high temporary construction wall be installed during on-going grading operations. With the installation of the proposed temporary sound wall mitigation, then impacts at the same location, 30-feet beyond the eastern property line, will be as low as 66.2 dBA, which will comply with the San Diego County Code of Regulatory Ordinances.

2.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the acoustical requirements of the County of San Diego for a Tentative Tract Map and Site Plan approval. Its purpose is to assess noise impacts from nearby roadway traffic to identify project features or requirements necessary to achieve common outdoor use areas to noise levels below 55 CNEL according to the Ramona Community Plan and private outdoor use areas to noise levels below 60 CNEL according to the County of San Diego Noise Element. The report will also explore the noise impacts of the temporary grading operation of proposed mechanical equipment to the site's neighboring properties. Finally, temporary construction noise is considered to determine anticipated noise levels and property line sound wall mitigation, if necessary.

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ} , for a specified duration. The CNEL is a 24-hour average, where sound levels during evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level, L_{DN} , which is a 24-hour average with an added 10 dB weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on A-weighted decibels. These metrics are used to express noise levels for both measurement and municipal regulations, for land use guidelines, and for enforcement of noise ordinances. Further explanation can be provided upon request.

Noise emission data is often supplied per the industry standard format of sound power level, which is the total acoustic power radiated from a given sound source as relates to a reference power level of 10 picowatts. Sound power level differs from sound pressure level, which quantifies the fluctuations in air pressure caused by acoustic energy.

Sound Pressure Level, or SPL, describes the observable effect of acoustic energy radiation, quantifying sound level as perceivable by the receiver. When Sound Pressure is used to describe a noise source, the distance between source and receiver must be known in order to yield useful information about the power rating of the source. Sound power level, on the other hand, is a specialized analytical metric used to fully quantify the acoustic energy emitted by a source and is complete without accompanying information on the position of measurement relative to the source. It may be used to calculate the sound pressure level at any desired distance.

2.1 Project Location

The project site is located at the southeastern corner of Day Street and La Brea Street in the Community of Ramona, California. The Assessor's parcel number's (APN's) for the property are 282-130-22, -23, -24, and -25. Neighboring land use in the proximity of the project is a mix of residential and commercial.

The project location is shown on the Vicinity Map, Figure 1, following this report. An Assessor's Parcel Map, Satellite Aerial Photograph, Topographic Map, and Planned Land Use Map of this area are also provided as Figures 2 through 5.

2.2 Project Description

The proposed project, Paseo Village Townhomes, consists of the construction of nine new two-story buildings encompassing a total of 31 single-family residential townhome style units, complete with private patios. It also incorporates two private driveways, outdoor parking, and a large common courtyard area. The overall property is rectangular in shape with an overall site area of approximately 2.28 acres.

3.0 ENVIRONMENTAL SETTING

3.1 Existing Noise Environment

The primary noise sources in the vicinity of the project site include traffic noise from Main Street, Day Street, and La Brea Street, as well as aircraft over flight noise associated with the Ramona Airport. No other noise sources are considered to be significant.

3.1.1 Vehicle Traffic Noise

Main Street is a four-lane, two-way Collector roadway running northeast-southwest in the vicinity of the project site. The paved roadway width is approximately 60-feet, curb to curb. The posted speed limit is 45 mph. Main Street, in the vicinity of the project site, currently carries a traffic volume of approximately 27,000 Average Daily Trips (ADT), according to Nick Ortiz, Associate Transportation Specialist for the County of San Diego's Public Works Department, Francisco.ortiz@sdcounty.ca.gov

Day Street is a two-lane, two-way Local roadway running southeast-northwest in the vicinity of the project site. The paved roadway width is approximately 40 feet, curb to curb. The posted speed limit is 25 mph. Day Street, in the vicinity of the project site, currently carries a traffic volume of approximately 600 ADT, according to Nick Ortiz.

La Brea Street is a two-lane, two-way Local roadway running northeast-southwest in the vicinity of the project site. The paved roadway width is approximately 40 feet, curb to curb. The posted speed limit is 25 mph. La Brea Street, in the vicinity of the project site, currently carries a traffic volume of approximately 300 ADT, according to Nick Ortiz.

The current calculated on-site traffic noise level at the northwestern corner of the project site is 57.9 CNEL. Current and future traffic volumes for the roadway sections near the project site are shown in Table 1. For further roadway details and projected future ADT traffic volumes, please refer to Appendix A: Traffic Noise Model Data and Results.

Table 1. Overall Roadway Traffic Information				
Roadway Name	Speed Limit (mph)		Current ADT	Future (2030) ADT
	Current	Future		
Main Street	45	45	27,000	33,000
Day Street	25	30	600	900
La Brea Street	25	30	300	700

3.1.2 Aircraft Over Flight Noise

The Ramona Airport is located approximately 1.23 miles to the northwest of the project site. The project is currently located approximately 0.5 miles northwest of the 55 CNEL contour. After reviewing the Ramona Airport Noise Compatibility Contours from 2004 and 2006 it has been determined that the aircraft noise impacting the project cannot be mitigated within reason, therefore only traffic noise will be taken into consideration for this report. For a graphical representation of these contours in conjunction with the project site location, please refer to Figure 6: Ramona Airport Noise 2004 Compatibility Contours Showing Project Location and Figure 7: Ramona Airport Noise 2006 Compatibility Contours Showing Project Location.

The noise environment at the project site is primarily the result of vehicle traffic traveling on Main Street, Day Street, and La Brea Street. Without mitigation or proposed project structures, the current 55 CNEL traffic noise contour is located approximately 100 feet east of the centerline of Day Street along the east side of the property. The current 50 CNEL contour is similarly located approximately 327 feet from the Day Street centerline. For a graphical representation of these contours, please refer to Figure 8: Site Plan Showing Current Traffic CNEL Contours and Noise Measurement Location.

3.1.2 Measured Noise Level

An on-site inspection and traffic noise measurement were made on the morning of Tuesday, October 31, 2006. The weather conditions were as follows: clear skies, low humidity, temperatures in the mid 70's with winds from the southwest at 1-2 mph. A "one-hour" equivalent measurement was made at the northwestern corner of the project site. The microphone position was placed approximately five feet above the existing project site grade. Traffic volumes for Day Street and La Brea Street were recorded for automobiles, medium-size trucks, and large trucks during the measurement period. After a continuous 15-minute sound level measurement, there was no change in the L_{EQ} and results were then recorded. The measured noise level and related weather conditions are found in Table 2. The calculated equivalent hourly vehicle traffic count adjustment and a complete tabular listing of all traffic data recorded during the on-site traffic noise measurement are found in Appendix A: Traffic Noise Model Data and Results.

Table 2. On-Site Noise Measurement Conditions and Results	
Date	Tuesday, October 31, 2006
Time	10:15 a.m. – 10:30 a.m.
Conditions	Clear Skies, Winds from the Southwest @ 1-2 mph, Temperature mid 70's with Low Humidity
Measured Noise Level	58.3 dBA L_{EQ}

3.1.3 Calculated Noise Level

Noise levels were calculated for the site using the methodology described in Section 4.1 (see next page) for the location, conditions, and traffic volumes counted during the noise measurements. Due to the low traffic volume along Day Street and Le Brea Street traffic lights and stop signs were not include within the traffic model. The calculated noise levels (L_{EQ}) were compared with the measured on-site noise level to determine if adjustments or corrections (calibration) should be applied to the traffic noise prediction model, Traffic Noise Model Version 2.5. Adjustments are intended to account for site-specific differences, such as reflection and absorption, which may be greater or lesser than accounted for in the model.

The measured noise level of 58.3 dBA L_{EQ} for Day Street and La Brea Street were compared to the calculated (modeled) noise level of 57.7 dBA L_{EQ} , for the same conditions and traffic flow. As there was only a 0.6 dB difference between the measured and the calculated noise level, no adjustment was deemed necessary to model future noise levels for this location. Please refer to Table 3, for further evaluation.

Table 3. Calculated versus Measured Traffic Noise Data				
Roadways	Calculated	Measured	Difference	Correction
Day Street and La Brea Street	57.7 dBA L_{EQ}	58.3 dBA L_{EQ}	0.6 dB	None

3.2 Future Noise Environment

The future (2030) traffic volumes for Main Street, Day Street, and La Brea Street were obtained from Nick Ortiz, Associate Transportation Specialist for the County of San Diego's Public Works Department. The future (2030) traffic volumes are projected to be 33,000 ADT for Main Street, 900 ADT for Day Street, and 700 ADT for La Brea Street. The future (2030) traffic noise level at the northwestern corner of the project site is expected to increase to 58.8 CNEL.

The roadway classification, speed limit, alignment and roadbed grade elevations are expected to remain the same for the above roadway sections. For further roadway details and projected future ADT traffic volumes, please refer to Appendix A: Traffic Noise Model Data and Results.

4.0 METHODOLOGY AND EQUIPMENT

4.1 Methodology

4.1.1 Field Measurement

Typically, a "one-hour" equivalent sound level measurement (L_{EQ} , A-Weighted) is recorded for at least one noise-sensitive location on the site. During the on-site noise measurement, start and end times are recorded, vehicle counts are made for cars, medium trucks (double-tires/two axles), and heavy trucks (three or more axles) for the corresponding road segment(s). Supplemental sound measurements of one hour or less in duration are often made to further describe the noise environment of the site.

For measurements of less than one hour in duration, the measurement time is long enough for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize; 15 minutes is usually sufficient for this purpose. The vehicle counts are then converted to one-hour equivalent volumes by using the appropriate multiplier. Other field data gathered includes measuring or estimating distances, angles-of-view, slopes, elevations, roadway grades, and vehicle speeds. This data was checked against the available maps and records.

4.1.2 Roadway Noise Calculation

The Traffic Noise Model, Version 2.5 program released by the U.S. Department of Transportation was used for calculate the future daytime average hourly noise level (HNL) at various locations at the project site. The daytime average hourly traffic volume is calculated as 0.058 times the ADT, based on the studies made by Wyle Laboratories (see reference). The HNL is equivalent to the L_{EQ} , and both are converted to the CNEL by adding 2.0 decibels, as shown in the Wyle Study. Future CNEL is calculated for desired receptor locations using future road alignment, elevations, lane configurations, projected traffic volumes, estimated truck mixes, and vehicle speeds. Noise attenuation methods may be analyzed, tested, and planned with TNM, as required. Further explanation can be supplied on request.

4.1.3 Cadna Noise Modeling Software

Modeling of the outdoor mechanical and construction noise environment is accomplished using Cadna Ver. 3.5, which is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed CAD model and uses the most up-to-date calculation standards to predict outdoor noise impacts

4.2 Measurement Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis Model 720 Integrating Sound Level Meter, Serial # 0263
- Larson Davis Model CA150 Calibrator, Serial # 0203
- Hand-bearing magnetic compass, microphone with windscreen, tripods
- Distance measurement wheel, digital camera

The sound level meter was field-calibrated immediately prior to the noise measurement and checked afterward, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters ANSI S1.4-1983 (R2001). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

5.0 IMPACTS AND MITIGATION

5.1 Exterior

The future noise environment is primarily the result of vehicle traffic traveling on Main Street, Day Street, and La Brea Street. Without mitigation or proposed project structures, the future 60 CNEL traffic noise contour is located approximately 40 feet west of the centerline of Day Street along the east side of the property. The future 55 CNEL contour is similarly located approximately 171 feet from the Day Street centerline. For a graphical representation of these contours, please refer to Figure 9: Site Plan Showing Future traffic CNEL Contours and Noise Measurement Location.

The Community of Ramona's Noise Element of the General Plan states that exterior noise levels shall not exceed 55 CNEL at common outdoor useable areas. Calculations show that the future traffic noise levels at the proposed common outdoor use area will be 51.8 CNEL. The calculated future levels at the common outdoor use area will not exceed 55 CNEL; therefore mitigation will not be necessary.

The County of San Diego's Noise Element of the General Plan states that exterior noise levels shall not exceed 60 CNEL at private outdoor useable areas. Calculations show that with the incorporation of the planned 3-foot high patio and balcony walls, the future traffic noise levels at proposed private outdoor use areas will range from 45.4 CNEL at the patio of Unit 31 to 59.9 CNEL at the balcony of Unit 1. Mitigation will not be necessary due to traffic noise impacts below 60 CNEL at the private outdoor use areas. Table 4 summarizes the future traffic noise impacts to the proposed outdoor use areas. Please refer to Figure 10: Site Plan Showing Traffic CNEL Impacts at Proposed First Level Residential Outdoor Use Areas and Figure 11: Site Plan Showing Traffic CNEL Impacts at Proposed First Second Residential Outdoor Use Areas.

Table 4. Future Traffic CNEL at Proposed Private and Public Outdoor Use Areas		
Receiver	Location	Exterior CNEL
R-1	Unit 1 Patio	57.2
R-2	Unit 1 Balcony	59.9
R-3	Unit 2 Patio	57.0
R-4	Unit 2 Balcony	59.6
R-5	Unit 3 Patio	56.8
R-6	Unit 3 Balcony	59.3
R-7	Unit 4 Patio	56.4
R-8	Unit 4 Balcony	58.6
R-9	Unit 5 Patio	56.3
R-10	Unit 5 Balcony	58.4
R-11	Unit 6 Patio	56.3
R-12	Unit 6 Balcony	58.2
R-13	Unit 7 Patio	56.1
R-14	Unit 7 Balcony	58.0
R-15	Unit 8 Patio	56.0
R-16	Unit 8 Balcony	57.4
R-17	Unit 9 Patio	56.3
R-18	Unit 9 Balcony	57.4
R-19	Unit 10 Patio	56.7
R-20	Unit 10 Balcony	57.3
R-21	Unit 11 Patio	53.9
R-22	Unit 11 Balcony	53.7
R-23	Unit 12 Patio	53.9
R-24	Unit 12 Balcony	53.7
R-25	Unit 13 Patio	53.9
R-26	Unit 13 Balcony	53.6
R-27	Unit 14 Patio	54.0
R-28	Unit 14 Balcony	53.6
R-29	Unit 15 Patio	54.0
R-30	Unit 15 Balcony	53.6
R-31	Unit 16 Patio	54.0
R-32	Unit 16 Balcony	53.6
R-33	Unit 17 Patio	54.0

Table 4. Future Traffic CNEL at Proposed Private and Public Outdoor Use Areas		
Receiver	Location	Exterior CNEL
R-1	Unit 1 Patio	57.2
R-2	Unit 1 Balcony	59.9
R-3	Unit 2 Patio	57.0
R-4	Unit 2 Balcony	59.6
R-5	Unit 3 Patio	56.8
R-6	Unit 3 Balcony	59.3
R-7	Unit 4 Patio	56.4
R-8	Unit 4 Balcony	58.6
R-9	Unit 5 Patio	56.3
R-10	Unit 5 Balcony	58.4
R-11	Unit 6 Patio	56.3
R-12	Unit 6 Balcony	58.2
R-13	Unit 7 Patio	56.1
R-14	Unit 7 Balcony	58.0
R-15	Unit 8 Patio	56.0
R-16	Unit 8 Balcony	57.4
R-17	Unit 9 Patio	56.3
R-18	Unit 9 Balcony	57.4
R-19	Unit 10 Patio	56.7
R-20	Unit 10 Balcony	57.3
R-21	Unit 11 Patio	53.9
R-22	Unit 11 Balcony	53.7
R-23	Unit 12 Patio	53.9
R-24	Unit 12 Balcony	53.7
R-25	Unit 13 Patio	53.9
R-26	Unit 13 Balcony	53.6
R-27	Unit 14 Patio	54.0
R-28	Unit 14 Balcony	53.6
R-29	Unit 15 Patio	54.0
R-30	Unit 15 Balcony	53.6
R-31	Unit 16 Patio	54.0
R-32	Unit 16 Balcony	53.6
R-33	Unit 17 Patio	54.0

R-34	Unit 17 Balcony	53.6
R-35	Unit 18 Patio	52.0
R-36	Unit 18 Balcony	57.7
R-37	Unit 25 Patio	47.1
R-38	Unit 25 Balcony	52.5
R-39	Unit 31 Patio	45.4
R-40	Unit 31 Balcony	54.0
R-41	Public-Courtyard	51.8

Calculations show that future traffic noise levels at the building facades will range from 41.9 CNEL at the first level western facade of Building 6 (Unit 22) to 59.5 CNEL at the second level western facade of Building 1 (Units 1, 2, and 3). Table 5 summarizes the future traffic noise impacts to the proposed exterior building facades. Please refer to Figure 12: Site Plan Showing Future Traffic CNEL Impacts at Exterior Building Façade.

Table 5. Future Traffic Exterior Building Façade Impacts			
Receiver	Floor	Receiver Location	Exterior Traffic CNEL
R-1	1	Building 1 South Façade	56.2
R-2	2	Building 1 South Façade	59.3
R-3	1	Building 1 West Façade	57.3
R-4	2	Building 1 West Façade	59.5
R-5	1	Building 1 East Façade/Building 8 West Facade	46.9
R-6	2	Building 1 East Façade/Building 8 West Facade	50.5
R-7	1	Building 1 North Façade/Building 2 South Facade	45.7
R-8	2	Building 1 North Façade/Building 2 South Facade	47.1
R-9	1	Building 2 West Façade	56.6
R-10	2	Building 2 West Façade	58.0
R-11	1	Building 2 East Façade/Building 6 West Facade	41.9
R-12	2	Building 2 East Façade/Building 6 West Facade	43.9
R-13	1	Building 2 North Façade/Building 3 South Façade	46.5
R-14	2	Building 2 North Façade/Building 3 South Façade	48.1
R-15	1	Building 3 West Façade	56.1
R-16	2	Building 3 West Façade	57.1
R-17	1	Building 3 East Façade	46.9

Table 5. Future Traffic Exterior Building Façade Impacts			
Receiver	Floor	Receiver Location	Exterior Traffic CNEL
R-18	2	Building 3 East Façade	48.7
R-19	1	Building 3 North Façade	57.1
R-20	2	Building 3 North Façade	57.0
R-21	1	Building 4 West Façade	48.1
R-22	2	Building 4 West Façade	49.6
R-23	1	Building 4 North Façade	55.2
R-24	2	Building 4 North Façade	55.0
R-25	1	Building 4 East Façade/Building 5 West Façade	46.6
R-26	2	Building 4 East Façade/Building 5 West Façade	48.6
R-27	1	Buildings 4 and 5 South Facades/Buildings 6 and 7 North Facades	49.7
R-28	2	Buildings 4 and 5 South Facades/Buildings 6 and 7 North Facades	53.2
R-29	1	Building 5 North Façade	55.2
R-30	2	Building 5 North Façade	54.9
R-31	1	Building 5 East Façade	52.3
R-32	2	Building 5 East Façade	55.2
R-33	1	Buildings 6 and 7 South Facades/Building 8 East Façade/ Building 9 West Façade	44.9
R-34	2	Buildings 6 and 7 South Facades/Building 8 East Façade/ Building 9 West Façade	48.7
R-35	1	Buildings 7 and 9 East Facades	52.8
R-36	2	Buildings 7 and 9 East Facades	56.7
R-37	1	Building 8 South Façade	53.5
R-38	2	Building 8 South Façade	56.7
R-39	1	Building 9 South Façade	53.3
R-40	2	Building 9 South Façade	56.8

Due to traffic noise impacts below 60 CNEL an exterior-to-interior analysis will not need to be conducted for the Paseo Village Townhome Project.

5.2 Mechanical Equipment

This section of our analysis investigates the contribution of the operation of the proposed project site's air conditioning units to impact the surrounding neighborhood. An assessment to determine if A/C mechanical noise mitigation is necessary and feasible was conducted in order to determine compliance with the County of San Diego nighttime property line noise limit at 50 dBA for residential use, and 55 dBA for commercial use is presented.

5.2.1 Applicable Noise Standards

The mechanical noise regulations applicable to this project are contained within the San Diego County Code of Regulatory Ordinances, Section 36-404. Based on these noise regulations the following property line noise limits apply to this project: 50 dBA from 10 p.m. to 7 a.m. weekdays, 10 p.m. to 8 a.m. weekends, and 52.5 dBA from 7 a.m. to 10 p.m. weekdays, 8 a.m. to 10 p.m. weekends for residential (except multiple dwelling) land use; and 55 and 60 dBA for commercial use during night and daytime hours respectively.

Please refer to copies of the pertinent sections of the County of San Diego's scoping letter and noise ordinance provided as Appendix B: County of San Diego Scoping Letter.

5.2.2 Noise Sources Included in Cadna Model

Existing and proposed features at the project site that were included in the Cadna noise prediction model are listed in Table 6. The air conditioning unit specified by Mr. Steve Powell, project manager, is a Comfortmaker Model N2H342AKA. PWL for these air conditioning units were acquired from the manufacturers specification sheets obtained from Mr. Steve Powell. For details on the PWL refer to Appendix C: Mechanical Equipment Data. The PWL for this air conditioning unit is 76 dBA. These air condition units are considered to be permanent onsite features that affect natural noise source propagation to adjacent property lines.

Table 6. Summary of Site Features Included in Cadna Model		
Description	Height	Sound Power Level(dBA)
Comfortmaker N2H342AKA Air Conditioning Unit	3ft Above Finished Grade	76

5.2.3 Summary of Site Specific Features Included in Cadna Model

Existing and proposed features at the project site that were included in the Cadna noise prediction model are listed in Table 7. These are considered to be the only on-site permanent features that will affect the noise propagation of the existing and proposed noise sources to the adjacent property lines

Table 7. Summary of Site Features Included in Cadna Model	
Description	Height
Proposed Buildings	25 feet above grade

5.2.4 Calculated Noise Levels for Model Comparison

In order to validate the results of the Cadna noise prediction model, the noise impacts from the proposed Comfortmaker air conditioning units were manually calculated as simple attenuation by distance. This was done for each of the receiver locations. These values were compared to those predicted by Cadna. The Cadna model includes additional attenuation due to intervening structures and ground absorption, which the differences in modeled and calculated noise levels are attributed to. This data is summarized in Table 8.

Noise Source	Receiver	Location	Distance from Source (ft.)	Calculated Noise Level ¹ (dBA)	Cadna Model Noise Level ² (dBA)	Difference (dB)
Comfortmaker N2H342AKA Air Conditioning Unit	North 1	Northwestern Property Line	101.6	35.1	18.5	16.6
	North 2	Northeastern Property Line	173.1	30.5	12.7	17.8
	East 1	East North Property Line	270.1	26.6	24.0	2.6
	East 2	East South Property Line	277.9	26.4	3.1	23.3
	South 1	Southeastern Property Line	296.5	25.8	1.1	24.7
	South 2	Southwestern Property Line	193.0	29.5	5.4	24.1
	West 1	West South Property Line	125.1	33.3	11.0	22.3
	West 2	West North Property Line	80.8	37.1	35.5	1.6

¹ Calculated as attenuation by distance only, $L_p = L_{wr} - 20 \log(d) - 0.75$

² As predicted by Cadna model

The attenuation differences between the manually calculated and Cadna values are primarily due to the location of the proposed buildings. Receivers West 2 and East 1 have a direct path to the source; all other receivers have one or more buildings in between the path of the source to property line receivers.

5.2.5 Mechanical Noise Impact

Based on the project information available, calculations show that without additional mitigation measures, the proposed A/C mechanical installation for the Paseo Village Townhome project will be in compliance with the County of San Diego nighttime residential and commercial property line noise limits.

The combined AC equipment noise impact from the proposed facility will be as high as 52.4 dBA L_{EQ} at the southern property line, at the worst-case location. Table 9 shows the calculated mechanical noise impact at relevant property lines to the north and west, along the exterior noise limits contained in the San Diego County Code of Regulatory Ordinances, Section 36-404. For details of the acoustical calculations, please refer to Appendix D: Mechanical Equipment Noise

Calculations. Please also refer to Figure 13: Site Plan Showing Receiver Locations and Noise Impacts from Mechanical Equipment.

Table. 9 Calculated Mechanical Noise Impact Levels at Relevant Property Lines				
Receiver	Receiver Location	Land Use	County of San Diego's Nighttime Maximum Permissible Sound Levels (dBA)	Noise Impact, L_{EQ} (dBA)
R1	North 1	Residential (R17)	50	47.7
R2	North 2	Residential (R17)	50	42.0
R3	East 1	Residential (R17)	50	48.2
R4	East 2	Residential (R17)	50	47.0
R5	South 1	Commercial	52.5	51.1
R6	South 2	Commercial	52.5	52.4
R7	West 1	Commercial	52.5	41.3
R8	West 2	Commercial	52.5	41.6

This analysis is based upon a worst-case scenario of proposed mechanical A/C equipment for the facility as submitted for our review by Mr. Steve Powell at Day Street Development, LLC. Substitution of mechanical A/C equipment with higher noise emission levels may invalidate the recommendations of this study.

These conclusions and recommendations are based on the most up-to-date, project-related information available. However, noise characteristics of mechanical equipment may vary for specific installations. Verification of compliance with County of San Diego's noise regulations can be provided, if desired, by conducting a noise survey consisting of sound level measurements at or close to the nearest impacted locations in each direction, after the project is built and in operation. This is best accomplished in the late night or very early morning hours while the equipment is in full operation and other ambient noise sources are minimized. If any sound attenuation is found to be necessary, it can be specified at that time.

5.2 Temporary Construction Noise

During the grading operation phase of the proposed project, noise impacts from the operation of construction machinery are expected. Our evaluation, based on information elicited from Mr. Glen Farmer, for Tri-Dimensional Engineering, will assess the anticipated construction noise impact to adjacent property lines to ensure compliance with relevant sections of the San Diego County Code of Regulatory Ordinance.

5.2.2 Relevant Regulations

Exterior noise limits for receiving land uses are clearly defined in the San Diego County of Regulatory Ordinances. These are outlined in section 36-410 for residential zones at maximum

levels of 75 dBA for more than 8 hours during any 24-hour period, when measured at the property lines of any property used for residential purposes.

The County's noise ordinance provides guidelines on the allowable times for construction operations specifically to restrict the impact of construction related noise to local residents. Section 36-410 of the noise ordinance forbids the conduct of non-emergency construction and building work in a manner that causes disturbance to person(s) residing in the vicinity between the hours of 7:00 p.m. to 7:00 a.m. Monday through Saturday.

5.3.2 Anticipated Construction Information

According to information provided by Mr. Glen Farmer, for Tri-Dimensional Engineering, soils reports do not indicate the presence of large rocks onsite. Blasting or use of an excavator with a ram or other heavy equipment to break up large boulders is not anticipated.

Significant construction noise sources will be limited to earth moving operations. Present estimates place material handling at approximately 3,300 cubic yards on the project site. This is considered a balanced site, where no earth/dirt importation or removal is expected.

Grading and digging are the two worst-case scenarios that will be evaluated for this report. The following equipment that will be used in each construction scenario is listed in Table 10. The range and nominal noise level at a distance of 50-feet and evaluation parameters are also listed in Table 10. For this analysis the nominal noise level will be used for the off-site impact calculations. Please see Appendix E: Construction Equipment Data.

Table 10. Expected Construction Equipment Noise Levels and Evaluation Parameters					
Expected Equipment (Details)	Range of Noise Level at 50-ft (dBA)	Nominal Noise Level at 50-ft (dBA L_{EQ})	Stationary Noise Source	Occurrences per Hour	Worst-Case Scenario
Dozer (Cat D8 and D4)	72 to 96	86	No	50	Grading
Tractor with Blade	72 to 96	84	No	50	Grading
Backhoe (Cat 420/426)	71 to 93	85	Yes	Constant	Digging

Sources: Wieland Associates, 1999 and <http://www.fhwa.dot.gov/environment/noise/highway/hcn06.htm>

It is estimated at this time that the equipment listed in Table 10 will be in operation for approximately 4 hours per day. A projected timeline for the grading process and a detailed construction schedule are not available at present. Please see Appendix F: Construction Information Submitted by Client.

Temporary construction noise is anticipated to impact neighboring properties during the grading process. The most noise sensitive receiver location lies to the east of the project site. This area is designated for residential use as is the site to the north. The remaining adjacent third-party-owned properties to the south and west are reserved for commercial and public facilities usage respectively.

Four noise receiver locations, placed at the worst impacted section of relevant property lines surrounding the project site, were selected to provide an analysis of the projected temporary construction noise impact to the surrounding properties. The results are shown in Table 11 which provides the estimated noise levels at the relevant property lines for two scenarios, grading and digging. Together, these values provide a realistic prediction of the noise impact range to be expected from the typically intermittent operation of machinery.

Table 11. Unmitigated Heavy Equipment Noise Impacts to Nearest Properties			
Receiver	Receiver Location	Noise Levels of All Grading Equipment	Noise Levels of All Digging Equipment
R1	North Property Line	73.1	72.6
R2	East 1 Property Line	72.9	74.4
R3	East 2 Property Line	73.4	82.6
R4	East 3 Property Line	70.6	81.3

The County of San Diego restricts noise exposure at residential property limits to a construction noise impact to 75 dBA or less. The most severely impacted adjacent property lies to the north and east of the site and is predicted to experience noise levels in the range of 81.3 to 84.6 dBA along the east property line. Due to construction noise impacts above 75 CNEL to the north and east, temporary sound wall property line noise mitigation is required.

A temporary construction sound wall is recommended to reduce noises levels below 75 CNEL. The temporary construction wall will be placed along the northern and eastern property lines. The height of the wall will be 10-feet above the grade at this location. Table 12 shows the construction noise impacts to the neighboring residential properties with the recommended mitigation. For information please refer to Appendix G: Construction Equipment Noise Calculations and Figure 14: Site Plan Showing Receiver Locations and Noise Impacts from Construction Equipment with Proposed Mitigation.

Table 12. Construction Noise Impacts To Residential Properties With Proposed Temporary Construction Wall Mitigation			
Receiver	Receiver Location	Temporary Construction Wall Height (ft)	Noise Levels of All Digging Equipment
R1	North Property Line	10.0	70.3
R2	East 1 Property Line	10.0	69.4
R3	East 2 Property Line	10.0	66.2
R4	East 3 Property Line	10.0	63.4

The temporary construction wall should be a single, solid sound wall. The temporary construction wall should be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one-inch thick or

have a surface density of at least 3½ pounds per square foot. Where architectural or aesthetic factors allow, glass or clear plastic may be used on the upper portion, if it is desirable to preserve a view.

Sheet metal of 18-gauge (minimum) may be used, if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Any doors or gates must be designed with overlapping closures on the bottom and sides and meet the minimum specifications of the wall materials described above. The gate(s) may be of ¾-inch or better wood, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated door jambs.

To reduce the cost and time spent on the temporary construction wall, a 3.5-foot "K-rail" system can be used as the footing for the sound wall system. The 3½ pounds per square foot requirements for the temporary construction wall can be satisfied with vertical 4-foot by 8-foot sheets of 3/4-inch plywood, mounted to a 4-inch by 4-inch post, placed 4-feet on-center.

The on-site construction equipment was analyzed for worst-case impacts. With the proposed mitigation all noise impacts to the neighboring residential properties will comply with the San Diego County Code of Regulatory Ordinances, Section 36-410.

6.0 CERTIFICATION

All recommendations for noise control are based on the best information available at the time our consulting services are provided. However, as there are many factors involved in sound and impact transmission, and Eilar Associates has no control over the construction, workmanship or materials, Eilar Associates is specifically not liable for final results of any recommendations or implementation of the recommendations.

The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the potential acoustical issues associated with the Paseo Village Townhome project in the Community of Ramona, California. This report was prepared by Kevin Fowler and Douglas Eilar.

EILAR ASSOCIATES, INC.



Kevin Fowler, Acoustical Consultant

Douglas Eilar, Principal

7.0 REFERENCES

1. 2001 California Building Code, Based on the 1997 Uniform Building Code, Appendix Chapter 12, Division II - Sound Transmission Control, Section 1208 - *Sound Transmission Control*.
2. 2001 California Building Code, Based on the 1997 Uniform Building Code, Chapter 12, Section 1203.3 - Ventilation.
2. 2001 California Noise Insulation Standards, effective 11/01/02, Based on 1997 Uniform Building Code, California Code of Regulations, Title 24.
3. California Department of Transportation, Traffic Noise Model.
4. Community of Ramona Noise Element to the General Plan
5. County of San Diego Noise Element to the General Plan
6. San Diego County Code of Regulatory Ordinances
7. Harris, Cyril M., Handbook of Acoustical Measurements and Noise Control, 3rd Edition, Acoustical Society of America, 1998.
8. Heeden, Robert A., Compendium of Materials for Noise Control, U.S. Department of Health, Education and Welfare, National Institute for Occupational Safety and Health, November 1978.
9. Irvine, Leland K., Richards, Roy L., Acoustics and Noise Control Handbook for Architects and Builders, Kreiger Publishing Company, 1998.
10. NBS Building Sciences Series 77, Acoustical and Thermal Performance on Exterior Residential Walls, U.S. Department of Commerce/National Bureau of Standards, November 1976.
11. Western Electro-Acoustic Laboratory, Inc., 1711 Sixteenth Street, Santa Monica, California 90404, 213-80-9268, Sound Transmission Loss Vs. Glazing Type, Window Size and Air Filtration, January 1985. The research described in this report was prepared for the California Association of Window Manufacturers, 823 North Harbor Boulevard, Suite E, Fullerton, California 92632, 714-525-7088.

FIGURES

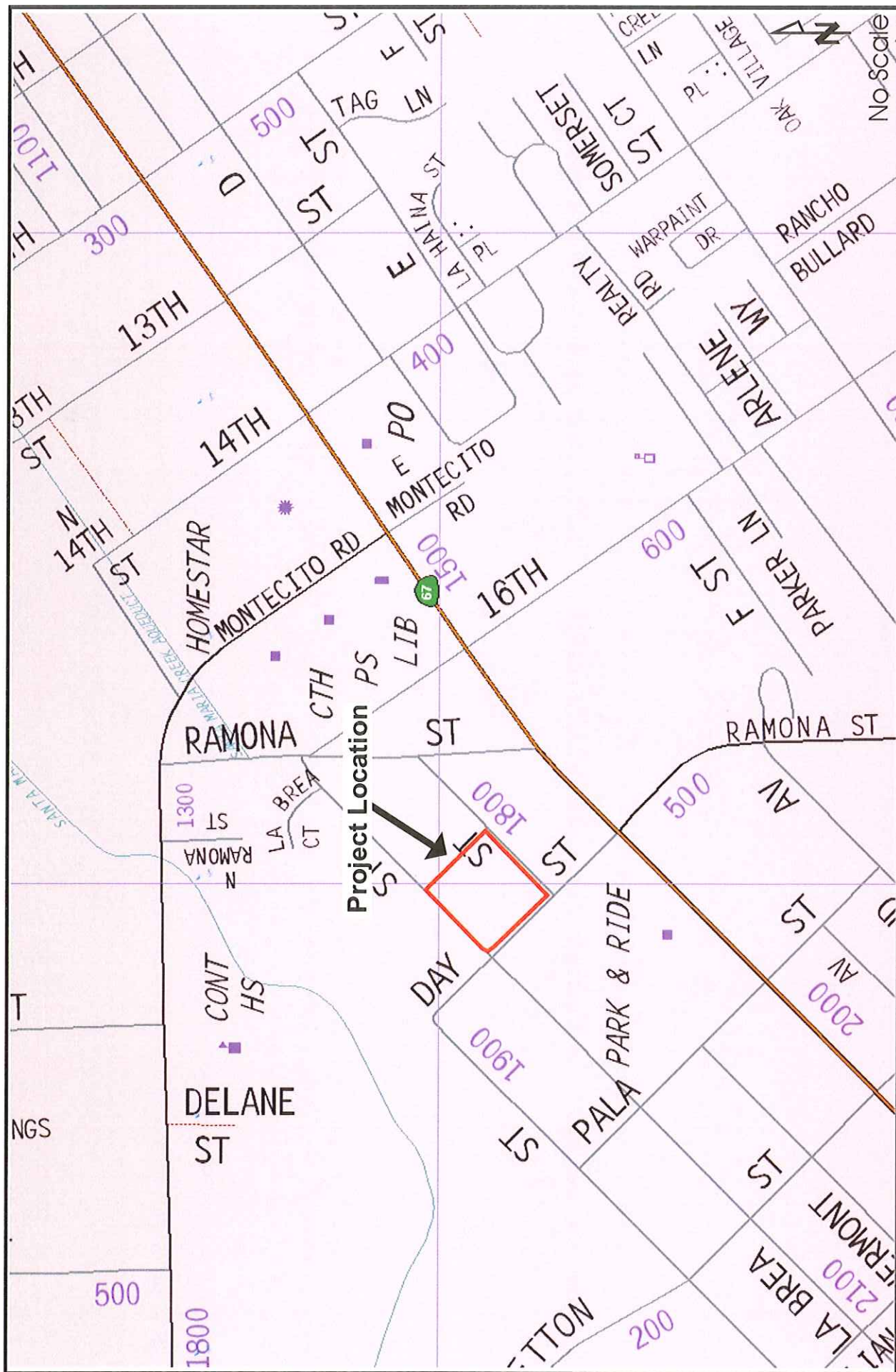


Figure 1

Vicinity Map
Job # A61038N2

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LEGEND

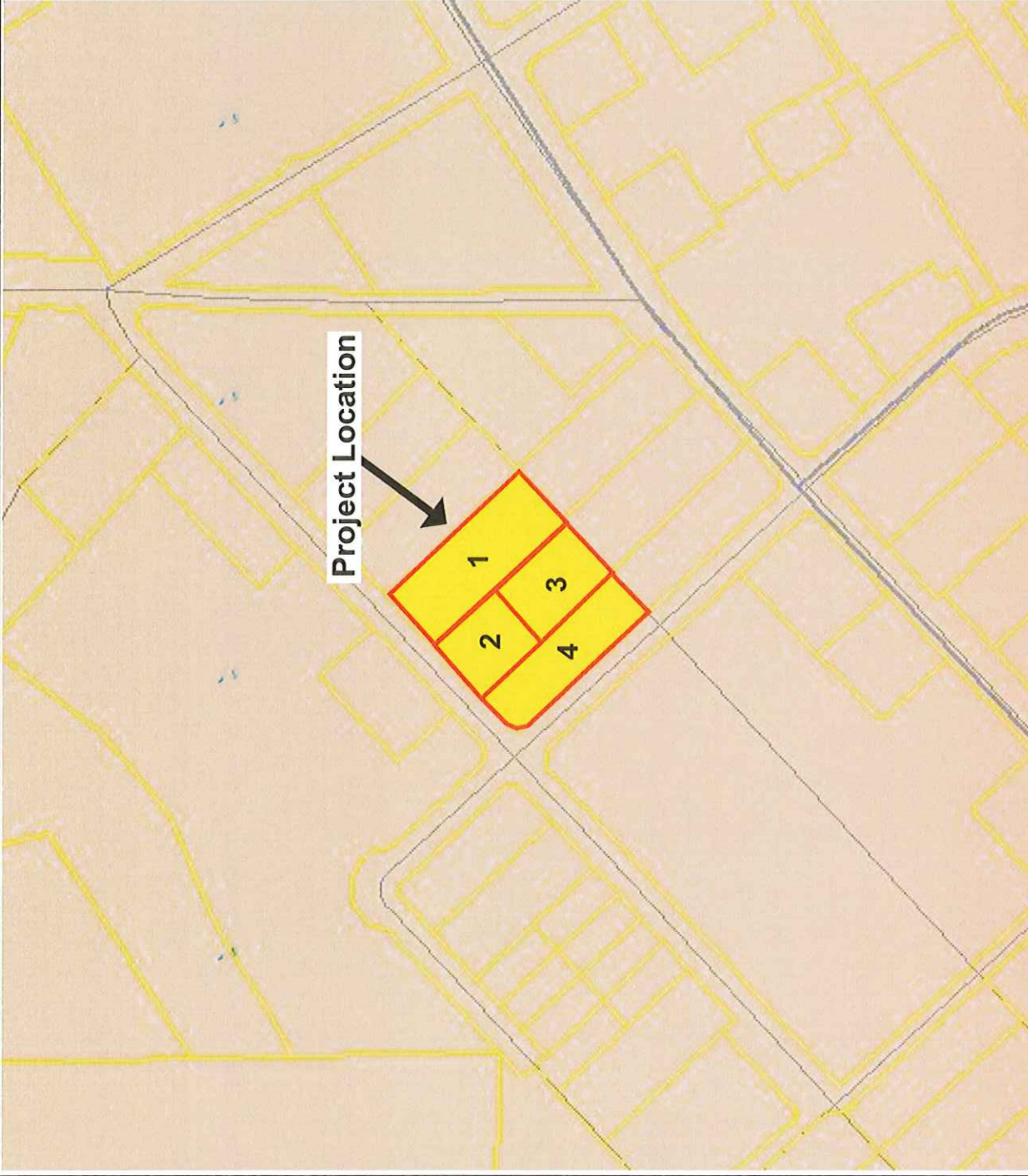
Reference Layers



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APN: 2. 282-130-23-00
APN: 3. 282-130-24-00
APN: 4. 282-130-25-00



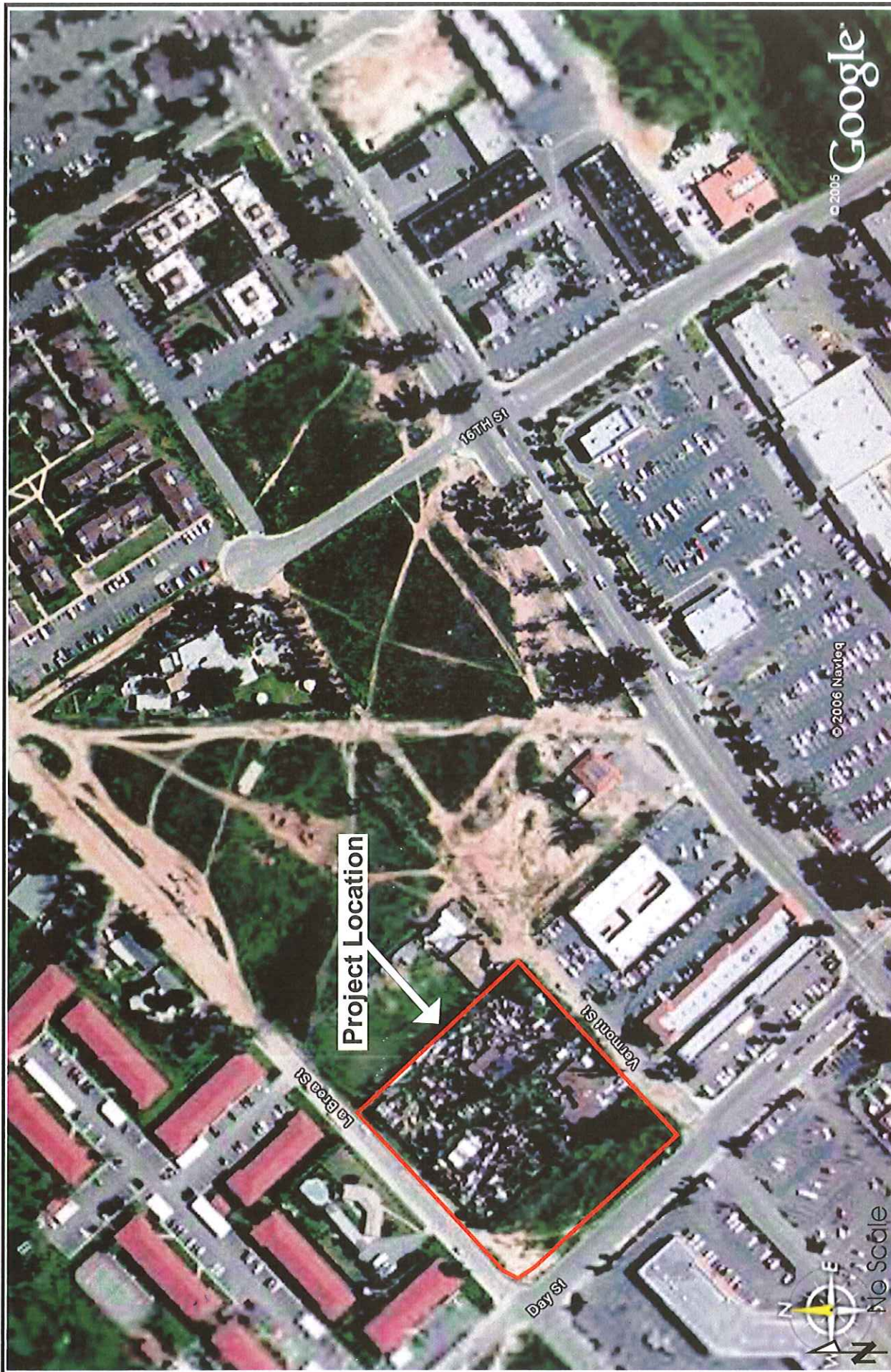
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Assessor's Parcel Map
Job # A61038N2

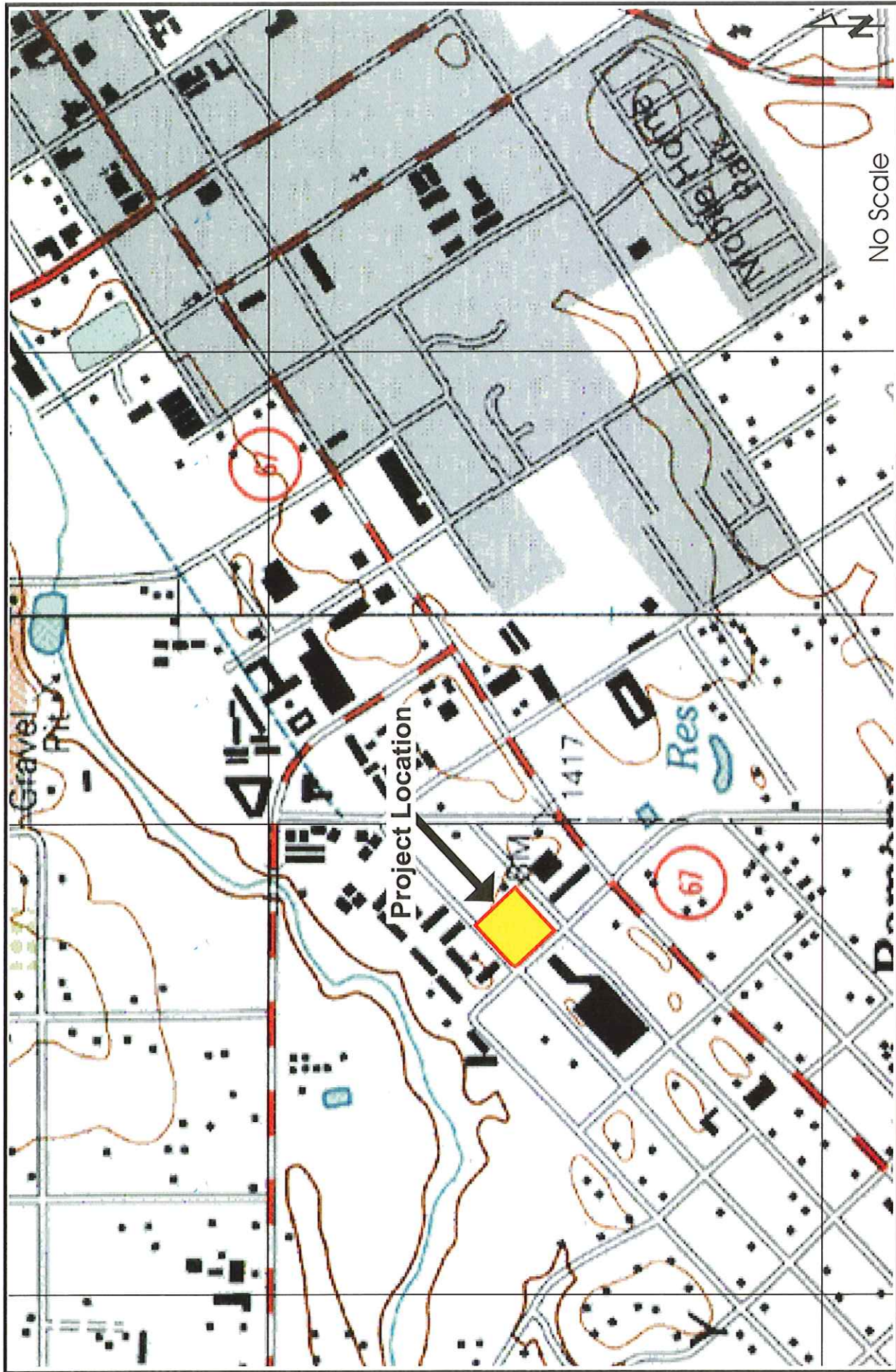
Figure 2



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Satellite Aerial Photograph
Job # A61038N2

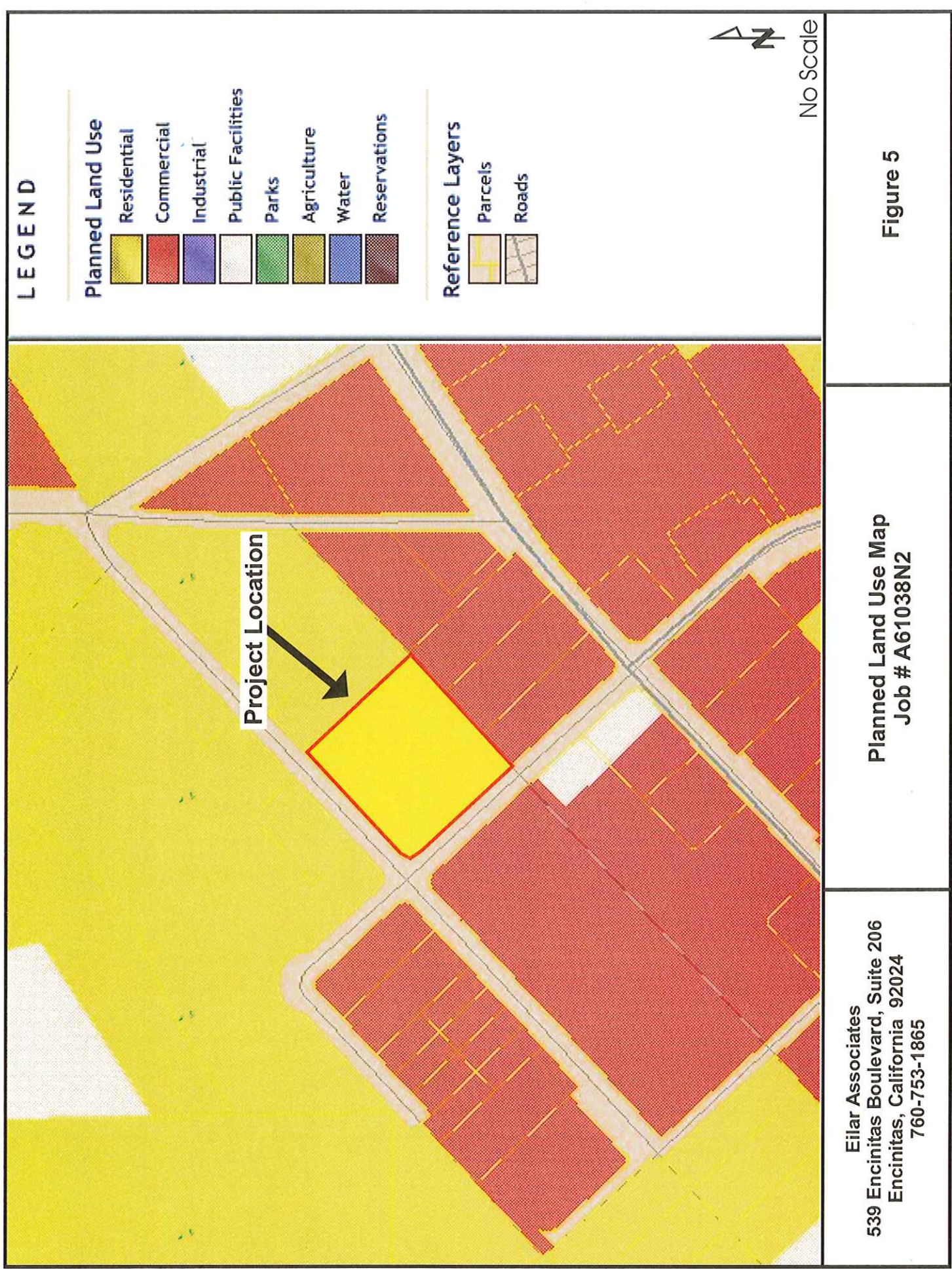
Figure 3



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Topographic Map
Job # A61038N2

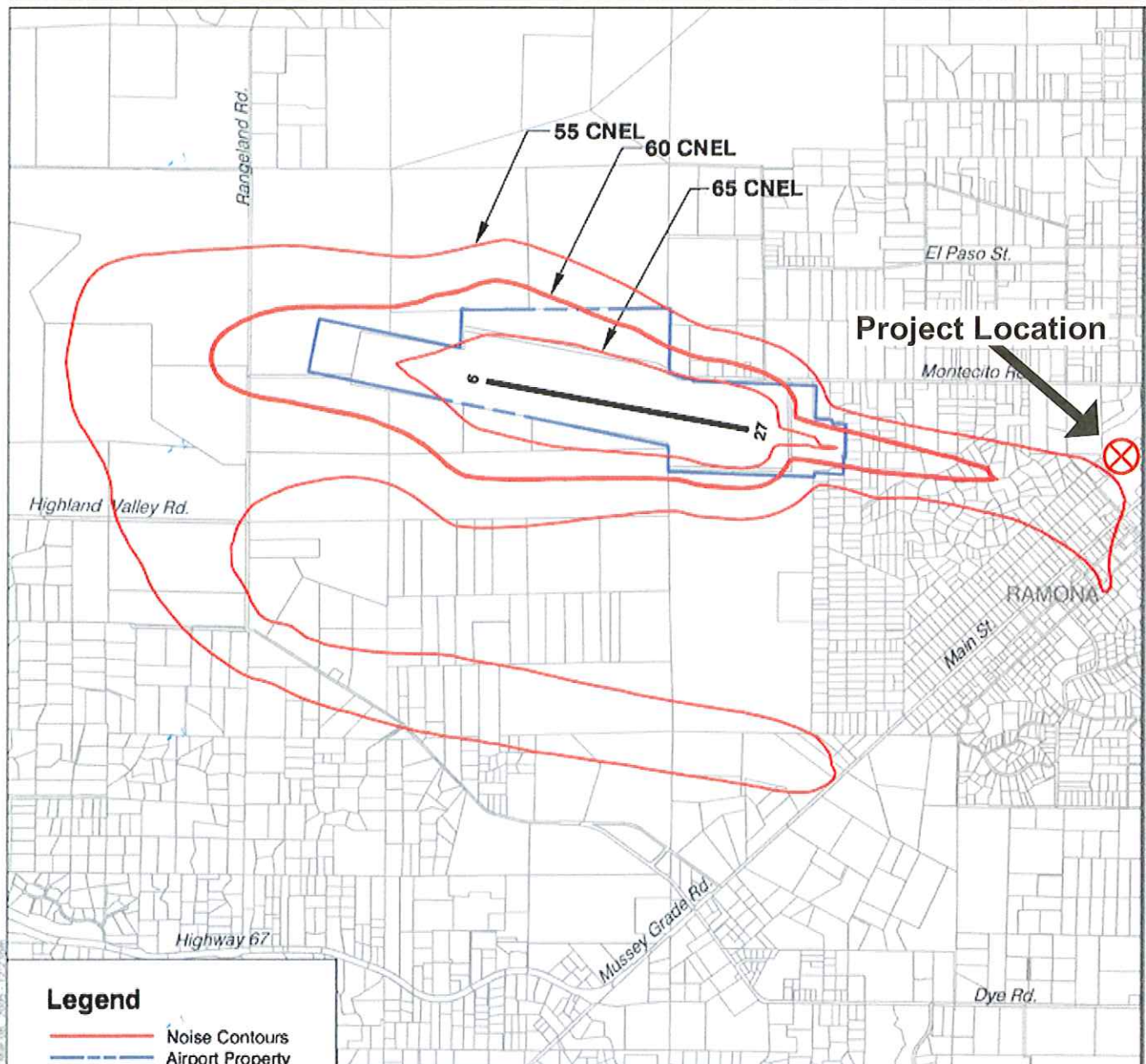
Figure 4



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Planned Land Use Map
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Figure 5



Legend

- Noise Contours
- Airport Property

Future (20 + years)

Annual Operations	197,000
Average Annual Day	540

Prepared by Mead & Hunt, Inc. (December 2004)

Sources:

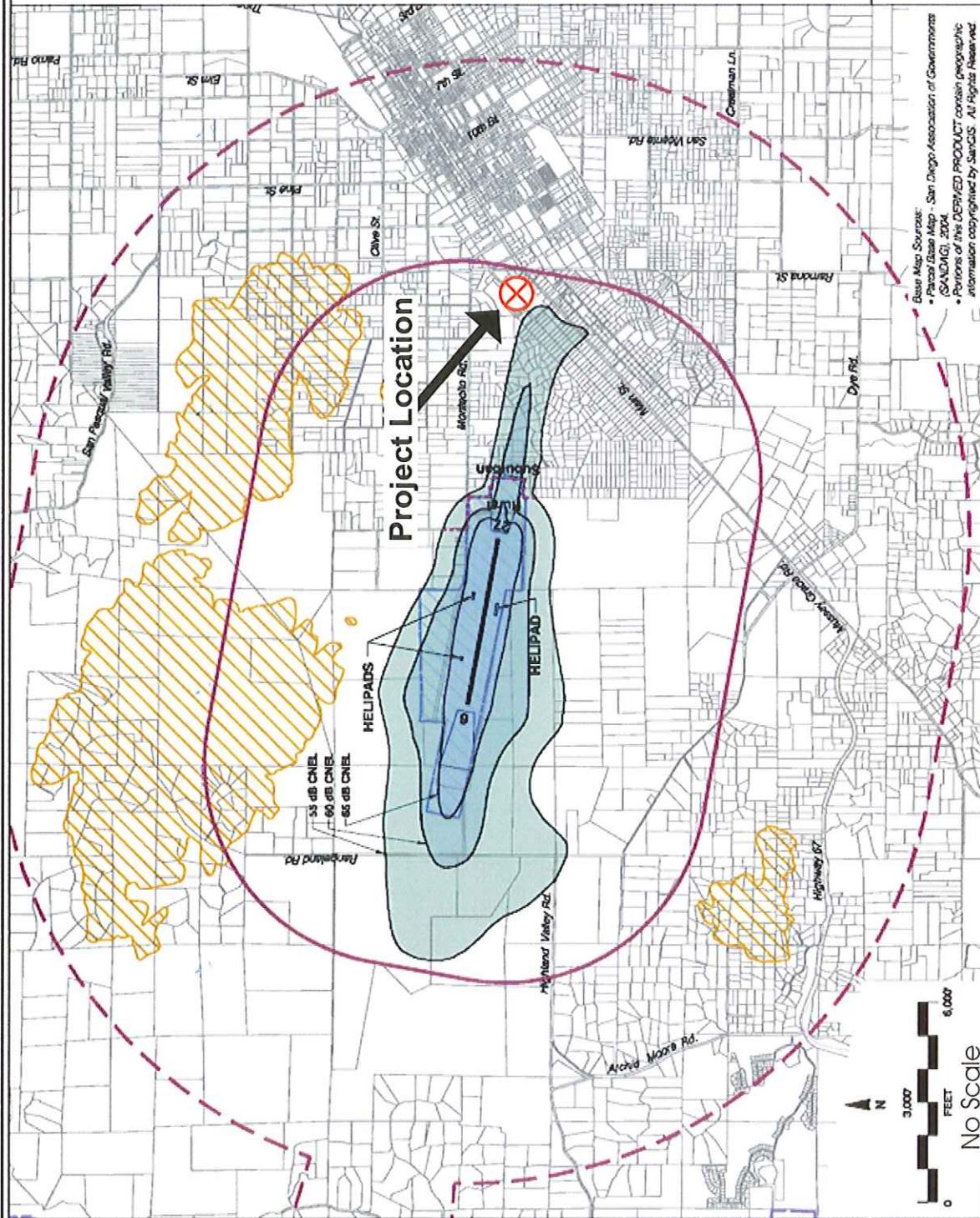
- Noise Contours - Harris Miller Miller & Hanson, Inc. (December 2004).
- Parcel Base Map - San Diego Association of Governments (SANDAG), 2004.
- Portions of this DERIVED PRODUCT contain geographic information copyrighted by SanGIS. All Rights Reserved.

Exhibit RMO-6

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**Ramona Airport
2004 NoiseCompatibility
Contours Showing Project Location
Job # A61038N2**

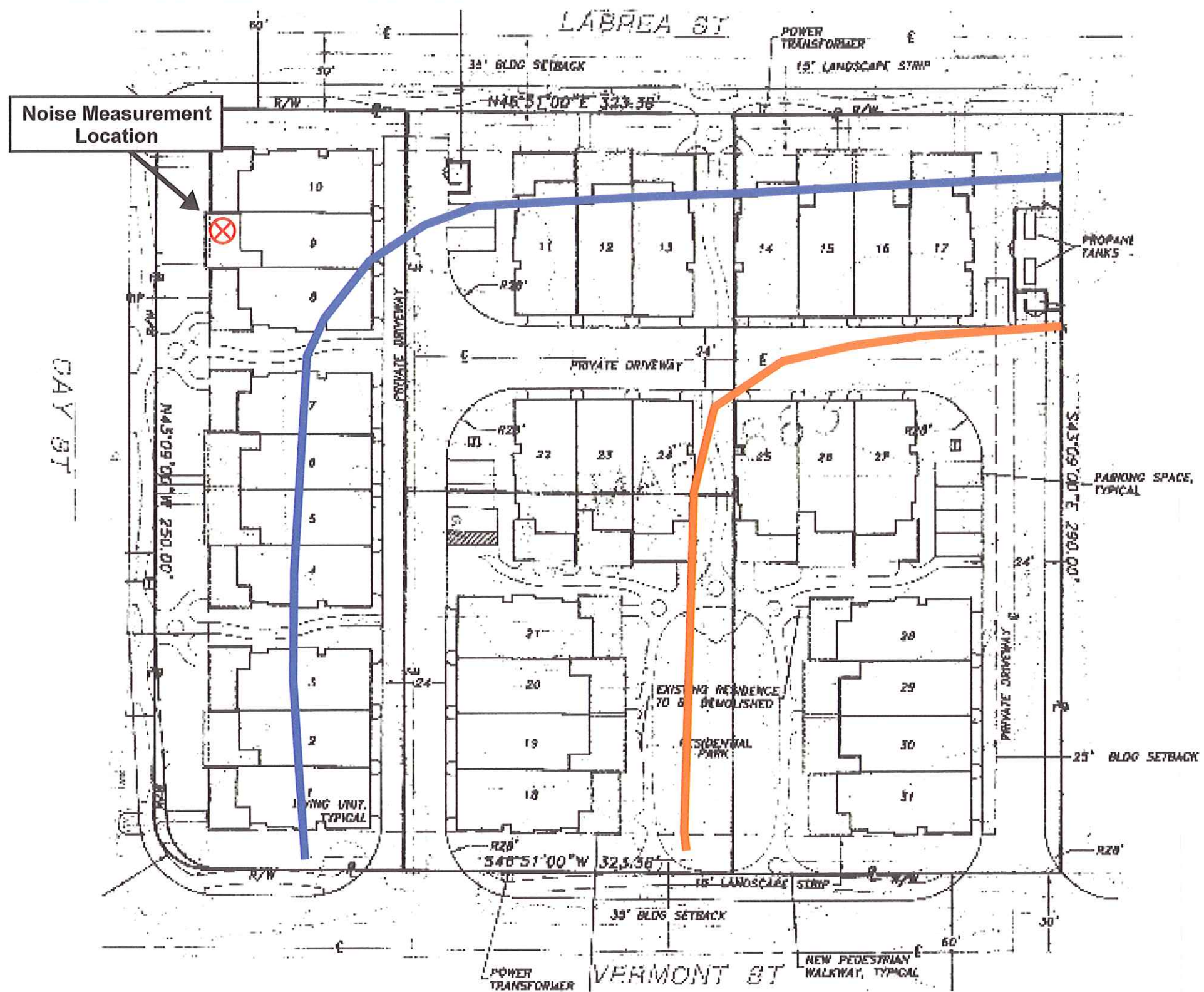
Figure 6



Ramona Airport 2006 Noise Compatibility Contours Showing Project Location
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Figure 7



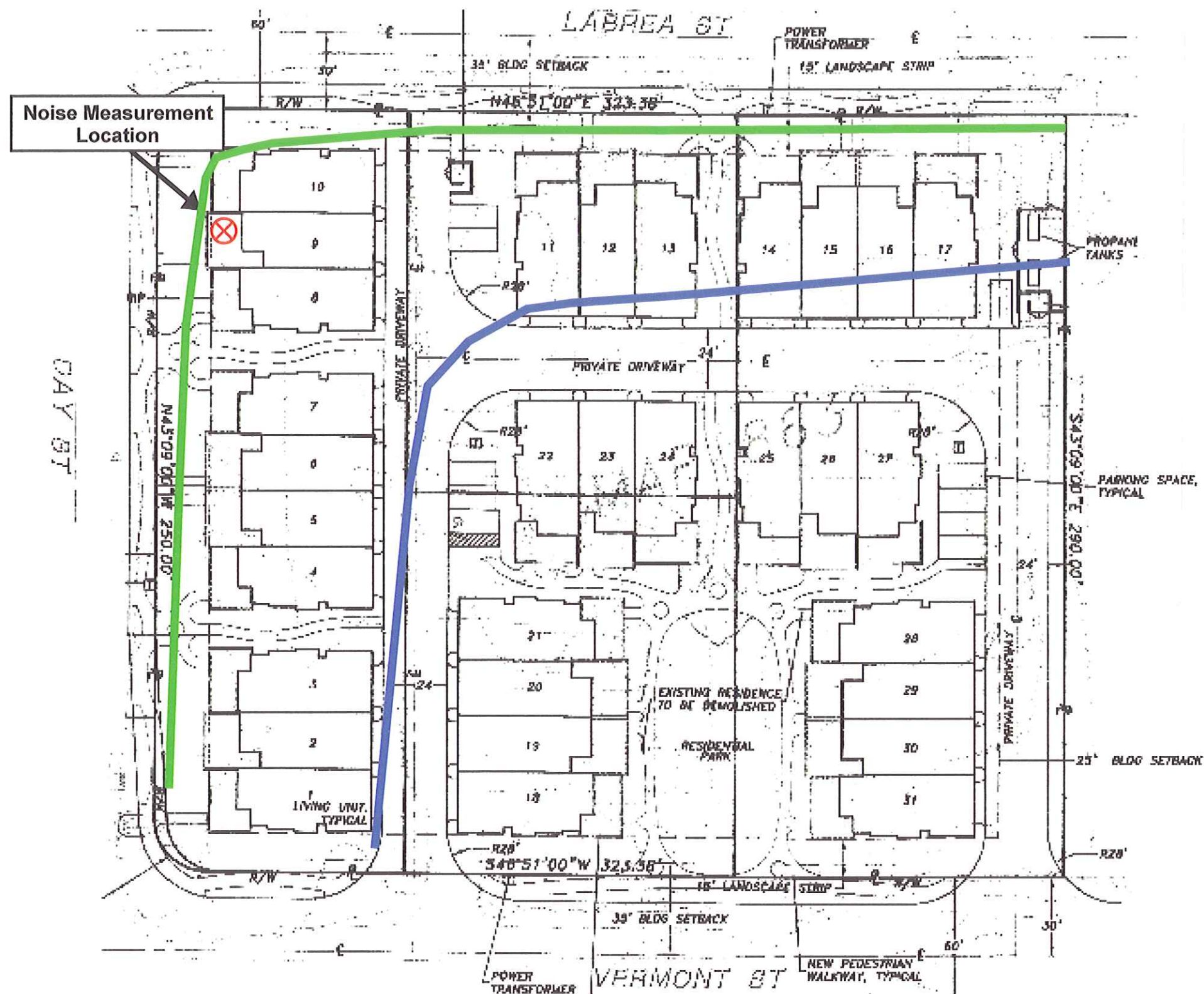
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55 CNEL Contour

No Scale

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Site Plan Showing Current Traffic CNEL Contours and Noise Measurement Location
Job # A61038N2

Figure 8



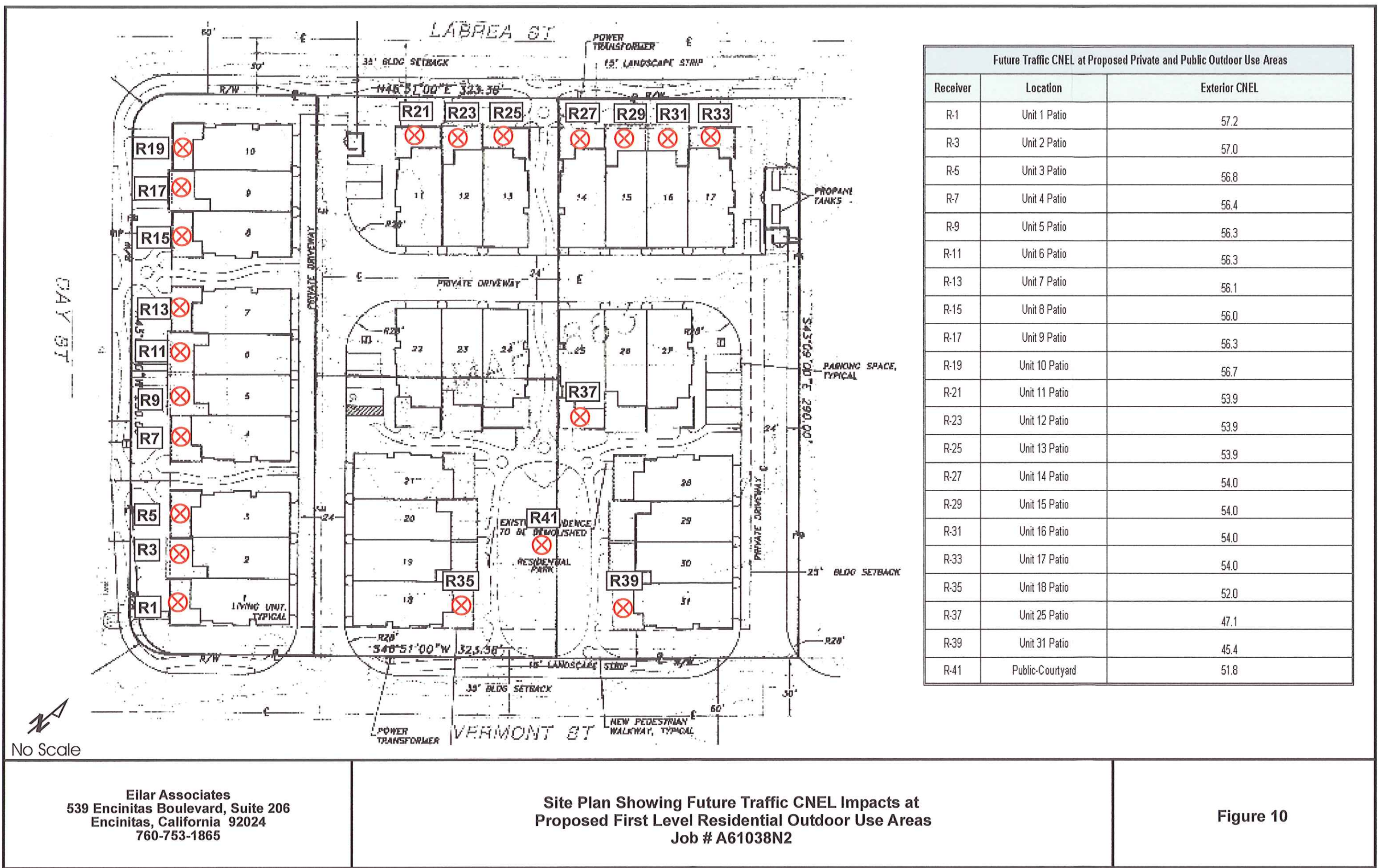
- 55 CNEL Contour
- 60 CNEL Contour

No Scale

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Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location
Job # A61038N2

Figure 9

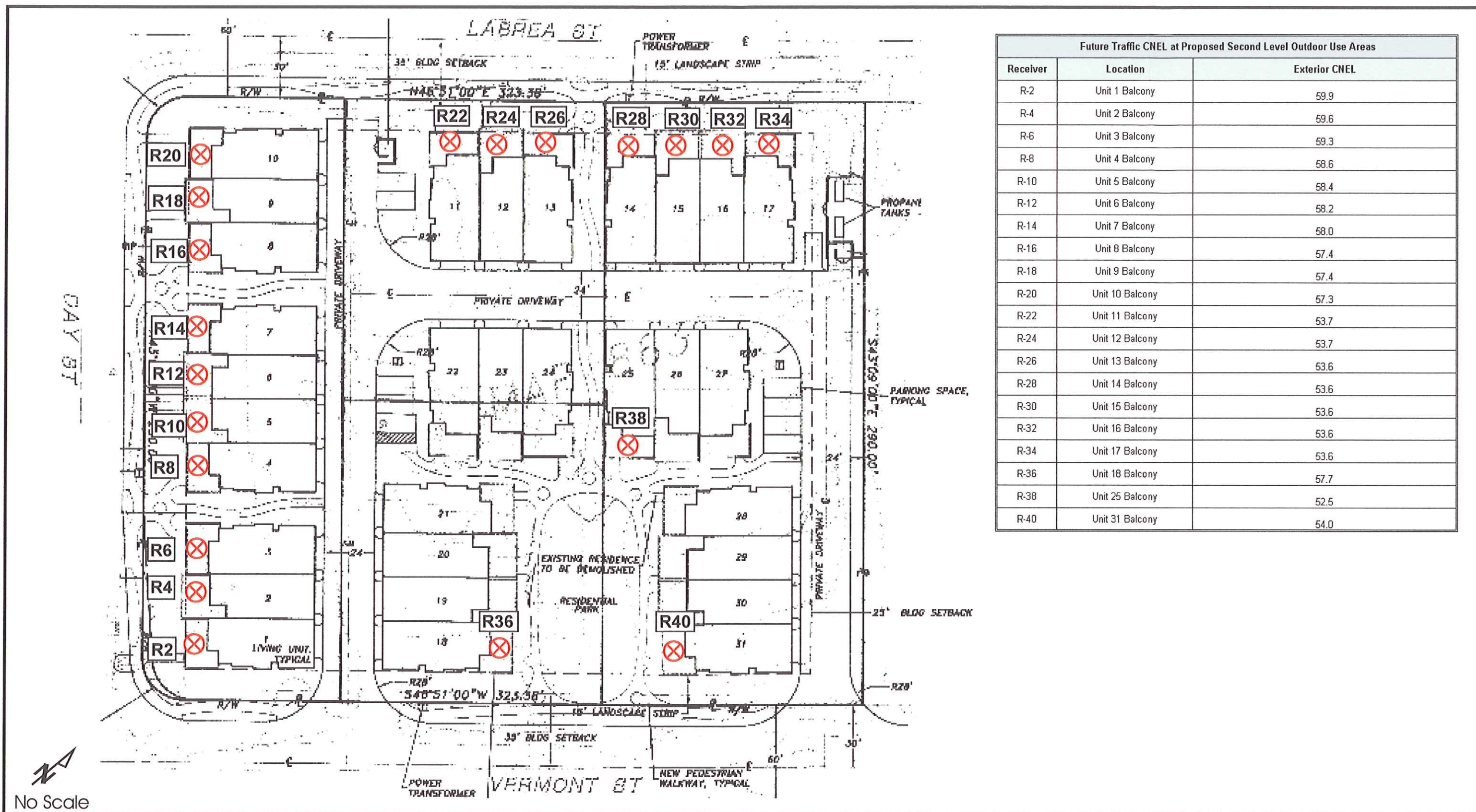


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Site Plan Showing Future Traffic CNEL Impacts at
Proposed First Level Residential Outdoor Use Areas
Job # A61038N2

Figure 10

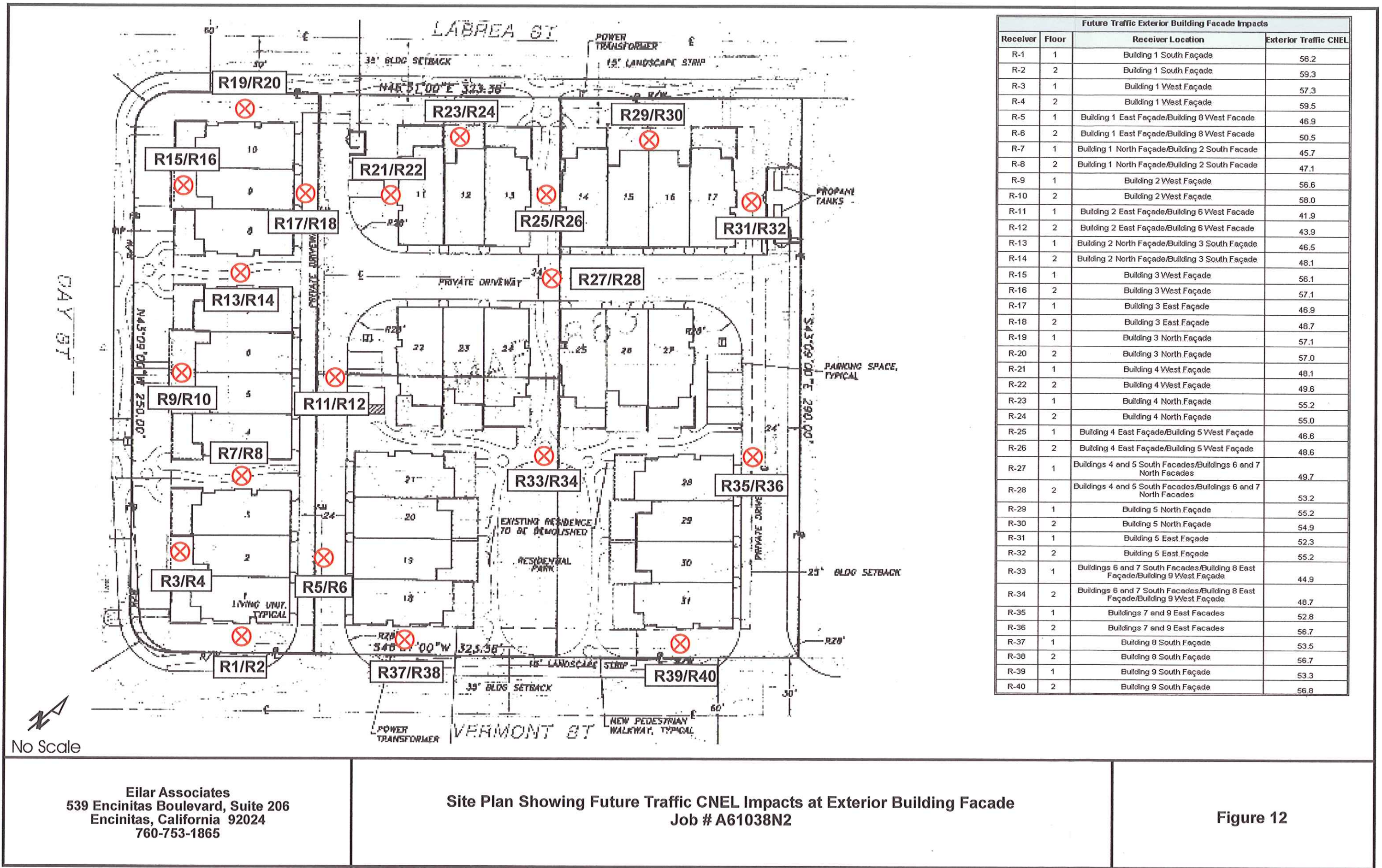


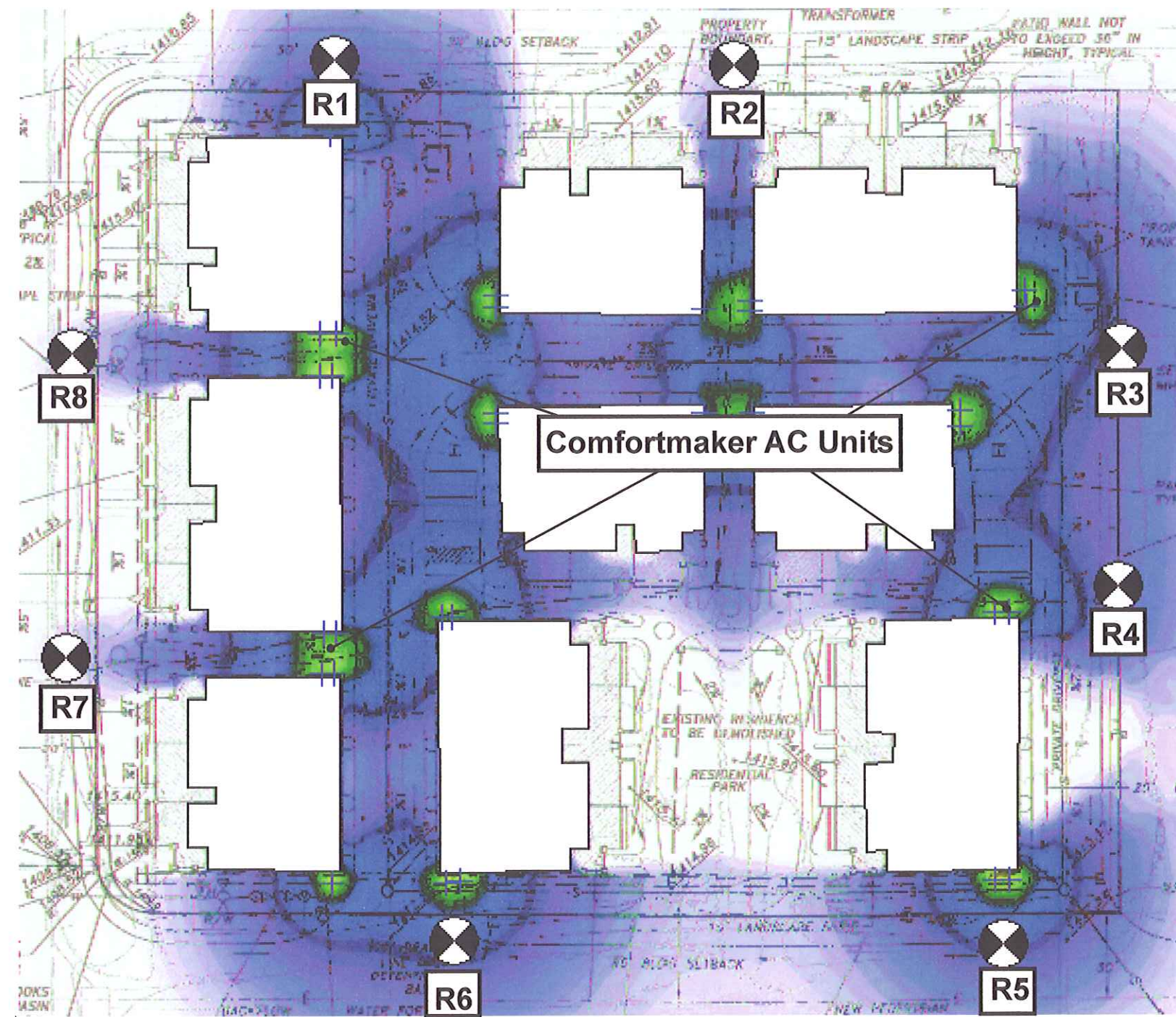
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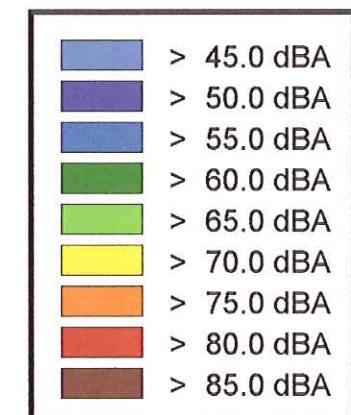
Site Plan Showing Future Traffic CNEL Impacts at
Proposed Second Level Residential Outdoor Use Areas
Job # A61038N2

Figure 11





Calculated Mechanical Noise Impact Levels at Relevant Property Lines				
Receiver	Receiver Location	Land Use	County of San Diego's Nighttime Maximum Permissible Sound Levels (dBA)	Noise Impact, L _{Eq} (dBA)
R1	North 1	Residential (R17)	50	47.7
R2	North 2	Residential (R17)	50	42.0
R3	East 1	Residential (R17)	50	48.2
R4	East 2	Residential (R17)	50	47.0
R5	South 1	Commercial	52.5	51.1
R6	South 2	Commercial	52.5	52.4
R7	West 1	Commercial	52.5	41.3
R8	West 2	Commercial	52.5	41.6

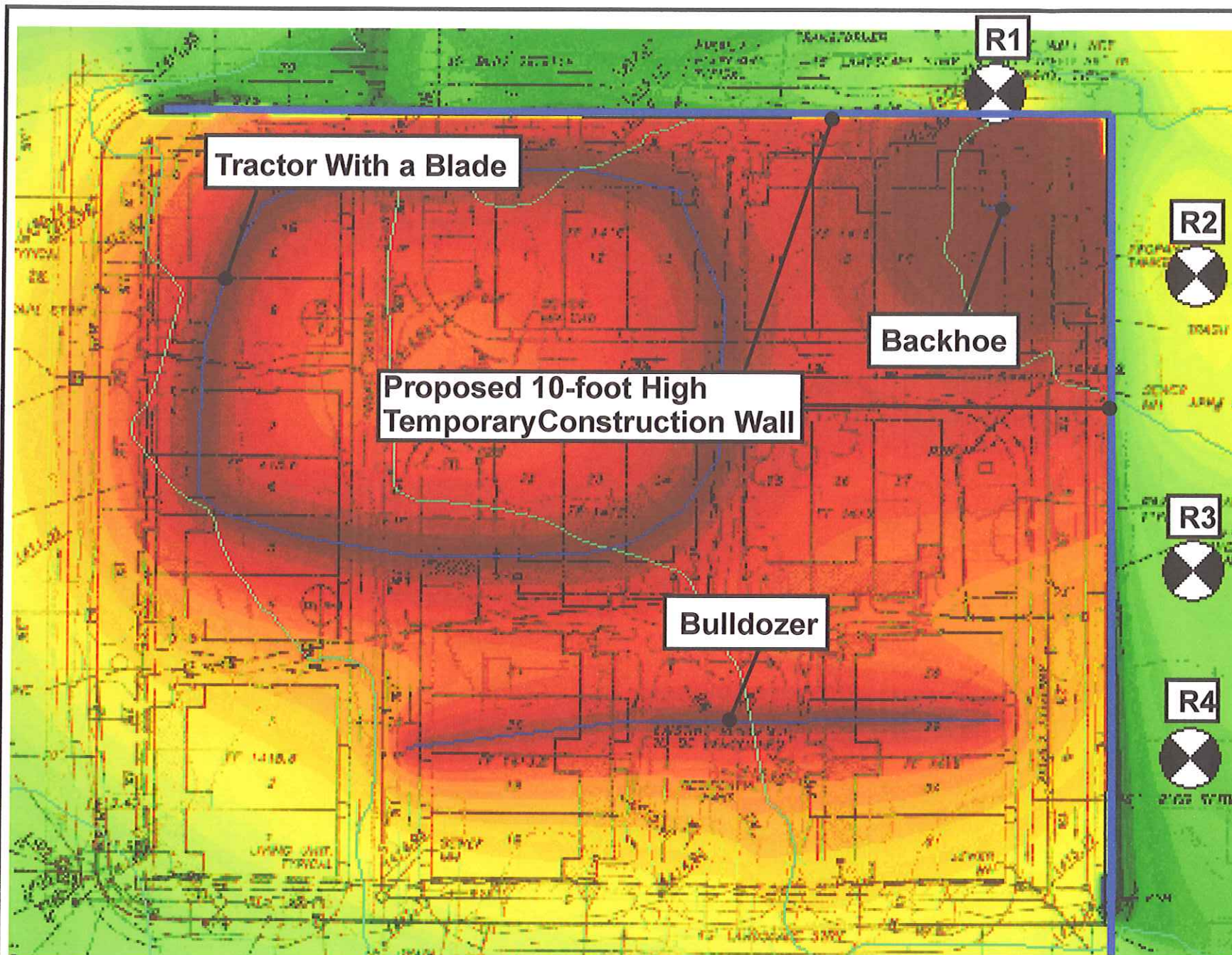


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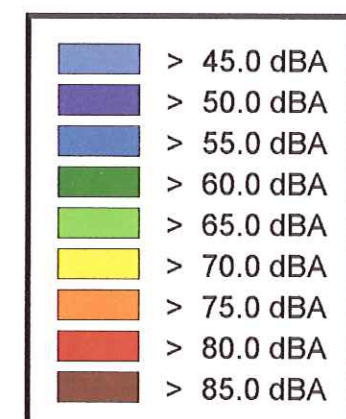
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Site Plan Showing Receiver Locations and Noise Impacts from Mechanical Equipment
Job # A61038N2

Figure 13



Construction Noise Impacts To Residential Properties With Proposed Temporary Construction Wall Mitigation			
Receiver	Receiver Location	Temporary Construction Wall Height (ft)	Noise Levels of All Digging Equipment
R1	North Property Line	10.0	70.3
R2	East 1 Property Line	10.0	69.4
R3	East 2 Property Line	10.0	66.2
R4	East 3 Property Line	10.0	63.4



No Scale

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Site Plan Showing Reciever Locations and Noise Impacts from Construction Equipment
With Proposed Mitigation
Job # A61038N2

Figure 14

APPENDIX F

Construction Information Submitted By Client

EILAR ASSOCIATES

ACOUSTICAL & ENVIRONMENTAL CONSULTING

October 30, 2006

Steve Powell
Day Street Development, LLC.
P.O. Box 823
Ramona, CA 92065
Phone: 760-789-5493

Project #A61038N1

Subject: Questionnaire for the Paseo Village Town Home Project, Day Street Development, LLC.

At your request, we are preparing a report regarding the worst-case noise impacts for the proposed Paseo Village Town Home project at the intersection of Day Street and La Brea in the city of Ramona, California (APN: 282-130-22, -23, -24, & -25). In order for this report to be accurately completed, we require the following information:

1. What is the anticipated quantity of material handling (in cubic yards)? 3,300 cubic yards

2. How much dirt will they be exporting off the site? None

3. How much dirt will be imported onto the site? None

4. How much dirt will be handled on site? (i.e. pushing it from Point A to Point B) 3,300 cubic yards

5. Does the soils report indicate large rocks onsite? No

6. Will there be blasting on site to break up large boulders? No

7. Will there be the use of an excavator with a ram or other mechanical equipment to break up large boulders? _____

No

8. What types of trucks (i.e. dumptrucks, bulldozers, rams, etc.) will be used on site? Please include any and all heavy machinery: _____

Bulldozer (D8) and (D4), tractor with box blade.

9. Are there any other significant sources of noise which will be generated onsite? _____

No

10. Is a construction schedule available at this time? No

This form was completed by (name) Glen Farmer of (company) Tri-Dimensional Engineering, Inc.
on (date) 10/31/06.

Signature



Please fax this information back to 760-753-2597 as soon as possible. If you have questions about completing this questionnaire, please contact me at 760-753-1865.

Thanks very much in advance for your time,

Kevin Fowler

Acoustical Consultant
Eilar Associates, Inc.
Ph: 760-753-1865 Ext. 217
Fx: 760-753-2597
kfowler@eilarassociates.com
www.eilarassociates.com

